No. 01-714

IN THE

Supreme Court of the United States

STATE OF UTAH, *et al.*,
Appellants,

v.

DONALD L. EVANS, *et al.*,
Appellees.

On Appeal from the United States District Court for the District of Utah

BRIEF OF APPELLEES-INTERVENORS NORTH CAROLINA, ET AL.

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QUESTIONS PRESENTED

1. Whether appellants' asserted injury – Utah's failure to be assigned an additional seat in the House of Representatives in the 2000 decennial reapportionment – is redressable, given that the President of the United States, the sole official responsible for determining the new apportionment figures, has no lawful authority to issue a revised apportionment determination because (a) the apportionment statute conferred authority to issue apportionment determinations only up to January 7, 2001, and (b) he is not a defendant to this action and thus cannot be authorized by judicial order to revise the apportionment determinations.

2. Whether the data editing procedure known as "hot deck imputation" employed in the 2000 census constitutes the "statistical method known as 'sampling'" prohibited by 13 U.S.C. § 195.

3. Whether the data editing procedure known as "hot deck imputation" employed in the 2000 census exceeds the power the Constitution confers exclusively on Congress to "direct" the "Manner in which" the "actual Enumeration" of the States' "respective Numbers" is "made" every ten years.

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JURISDICTION

For the reasons elaborated below, *infra* at 23-30, this Court lacks jurisdiction because appellants' asserted apportionment injury cannot be redressed by a judicial order.

STATEMENT OF THE CASE

Article I, section 2, clause 3 of the Constitution, as modified by section 2 of the Fourteenth Amendment, requires that seats in the House of Representatives be apportioned among the States "according to their respective numbers, counting the whole number of persons in each State." The "actual Enumeration" of the "whole number of persons in each State," the clause further provides, must be determined at least every ten years, and "in such manner as [Congress] shall by Law direct." That constitutional provision "vests Congress with virtually unlimited discretion in conducting the decennial 'actual Enumeration.'" *Wisconsin v. New York*, 517 U.S. 1, 19 (1996). In the Census Act, Congress conferred that discretion on the Secretary of Commerce, authorizing him to conduct the census "in such form and content as he may determine." 13 U.S.C. § 141(a); *see Wisconsin*, 517 U.S. at 19 ("Congress has delegated its broad authority over the Census to the Secretary").

Pursuant to that mandate, the Secretary has long employed a variety of statistical methods to deal with the inevitable errors discovered in the millions upon millions of individual record forms delivered to the Bureau's central database after all direct contact efforts have been completed. Among the editing and correction methods employed by the Secretary in the 2000 census was a process for enumerating housing units whose individual records ended up at the central Bureau database, for a variety of reasons, with a specified address recorded, but with inconsistent or missing data for population count, occupancy, or status. Under that method, when the Bureau came across a housing unit record form with missing or conflicting data, it would enumerate

that unit by "imputing" to the record the enumeration of a unit in the same census tract that had been personally assessed by a Bureau enumerator during census follow-up efforts. *See infra* at 15-19. That process is a version of the statistical method known as "hot-deck imputation,"[1] a data editing method the Bureau has employed for decades.

A. Historical Background On The Data Editing Procedure Known As Hot-Deck Imputation

We set forth in some detail both the historical and technical context for the use of imputation methods in the enumeration of the population, because appellants' attacks on imputation rest on several important misconceptions about the imputation process.[2]

1. The first four censuses were conducted by U.S. marshals and their assistants, who tallied the individual returns and reported their district results without further review in Washington, D.C. *Encyclopedia of the U.S. Census* ("*Encyclopedia*") 196 (Margo J. Anderson ed., 2000) (AR C00430). Starting with the 1820 census, clerks in Washington reviewed the field results for errors, and in 1850 the responsibility for tallying returns was centralized in Washington. *Id.* Beginning in 1890, electromechanical punch cards were used to automate the tallying of responses in various categories, and "armies" of clerks were employed to record returns on

[1] The phrase "hot deck" refers to imputation in which data is imputed from another record in the *same* population being enumerated; "cold deck" refers to imputation in which data is imputed from a record in some other population, e.g., a previously-observed census. The "deck" terminology is derived from the time when census records were maintained in the form of mechanical punch cards. *Encyclopedia of the U.S. Census* 196 (Margo J. Anderson ed., 2000) (AR C00430).

[2] In this discussion the North Carolina appellants will cite only primary source record documents and sworn declarations. Appellants' citations to the record are, with few exceptions, citations to their own "Statement of Undisputed Facts," many of which are not just disputed, but demonstrably incorrect. JA 216-46, 334-48, 431-32.

punch-cards. *Id.* As the volume of returns increased exponentially over time, clerks were required to perform more and more "editing" of the returns to correct errors of various kinds. *Id.* Elaborate rules were developed to ensure regularity in the editing process. *Id.* Initially, however, these rules did not include any method for identifying a value for data that appeared not just incorrect, but was missing altogether. *Id.* at 197 (AR C00431).

In the 1940 census, the editing process for the first time incorporated a system for imputing age to persons for whom no age was reported. *Id.* The 1950 census employed a system for imputing employment status on the basis of different combinations of answers to certain questions. *Id.*

2. The 1960 census was the first to employ high-speed computing, expanding the opportunities for sophisticated editing of individual record forms. *Id.* Those opportunities included the first general use of imputation to fill in missing entries from those forms, including population data. *Id.*; Hogan Decl. ¶ 41 (JA 267). The Bureau's published report on the 1960 census explained the reasons for imputation:

> Editing the census returns involved identifying nonresponses and inconsistencies from whatever source by means of various checks and correcting the inconsistencies. The allocation process supplied missing entries.
>
> Inconsistencies and nonresponses in the basic data could result from several of the major census processes. For example, during the enumeration, some respondents furnished inconsistent answers and the enumerators failed to notice the inconsistencies. The enumerators sometimes failed to ask a question or failed to record the response or else recorded it on the wrong place in the schedule. Coders sometimes missed a response which was written on a schedule and sometimes entered an inconsistent code for one.

> Sometimes a mark on a schedule was so light that FOSDIC [the computer recording device] did not read it and sometimes an erasure was so poor that FOSDIC read a mark that should have been erased. . . . The quantity of data collected in a census, the number of respondents, the number of enumerators and other census workers, and the number of different operations required are so large that it is considered inevitable that some errors will occur. Editing to correct obvious errors is a regular part of the census process.
>
> * * *
>
> Most of the editing and allocation was accomplished by the use of high-speed electronic computers, which performed edits and allocations of a highly complex nature with greater consistency than could have been achieved by clerical processing and with savings in both time and money.

1960 Censuses of Population and Housing: Procedural History ("*Procedural History*") 81-82 (AR C00377-78). To resolve problems with missing count data, "data for persons in the last preceding housing unit were duplicated to replace the occupants for whom there was no data." *Id.* at 83 (AR C00379). Neither Congress, nor any State, objected to the Bureau's use of imputation in the 1960 census for apportionment purposes on the ground that it constituted "sampling" prohibited by the recently enacted 13 U.S.C. § 195.

3. The 1970 census was the first to use the "mail-out/mail-back" procedure of self-enumeration. Hogan Decl. ¶ 42 (JA 268). The majority of the population in that census (and in every subsequent census) has been enumerated through this process, rather than through direct contact with an enumerator. *Id.* The new mailing procedure also introduced yet another source of potential error into the processing of forms – mistakes by respondents, who were not professional enumerators. The Bureau reported that "[t]he com-

puter editing procedures for 1970 were essentially the same as 1960, except that for 1970 far more extensive use was made of 'hot decks.'" *1970 Procedural History* 15-65 (AR C00395). The 1970 computer editing procedures imputed population counts to individual housing units where (1) a questionnaire listed a unit as occupied, but did not list the number of occupants, and (2) where the questionnaire was not properly microfilmed or recorded by FOSDIC. *Id.* at 15-66 (AR C00396).

In addition to, and distinct from, the computer editing imputation process, the Bureau also used imputation in conjunction with two forms of sampling in the 1970 census. *See* Sampling and Statistical Methods In Past Censuses, Jan. 13, 1997, at 2-3 (Memo #F-1) (AR C001460-61) (distinguishing between imputation and sampling procedures in 1970 census); Hogan Decl. ¶ 44 (JA 269) (same); *see generally 1970 Census of Population and Housing: Effect of Special Procedures To Improve Coverage In The 1970 Census* (Dec. 1994) ("*Effect of Special Procedures*") (AR C00398-411). The first method of sampling, the "National Vacancy Check," was implemented because the Bureau discovered that enumerators were often misclassifying occupied units as "vacant" when they received no response. *Effect of Special Procedures* 11 (AR C00404). To resolve that problem, the Bureau selected a "sample" of housing units initially classified by enumerators as vacant, and revisited each to determine conclusively whether it was vacant and, if not, the number of occupants. *Id.*; Memo #F-1, at 2 (AR C001461). From the sample results the Bureau calculated the portion of units in each "enumeration district" ("ED") designated as "vacant" to be redesignated as "occupied," and then used hot-deck imputation to determine the occupancy number to apply to each redesignated unit. *Id.* at 11-13 (AR C00404).

The second method of sampling used in the 1970 census was the Post-enumeration Postal Check ("PEPOC"). This

adjustment focused on southern states, because post-1960 analyses had shown that housing unit coverage in the South was "considerably worse" than in the rest of the country. *Id.* at 15 (AR C00408); Memo #F-1, at 3 (AR C001462). In this process the Bureau cross-checked its results with postal address lists and identified a large number of addresses that had not been enumerated. The Bureau then selected a sample of those missed addresses for direct contact. *1970 Procedural History* 8-28 (AR C00391). From this sample the Bureau calculated the proportion of occupied housing units missed in each ED by the initial contact procedures, and added the proportionate number of housing units dictated by the sample. The Bureau then used hot-deck imputation to enumerate each added unit. *Id.* at 8-29 (AR C00392); *Effect of Special Procedures* 15 (AR C00408).

The example of the 1970 census demonstrates that imputation *may* be used in conjunction with sampling methods, Hogan Decl ¶ 44 (JA 269) – as occurred with the National Vacancy Check and PEPOC – but that imputation may also be done without the use of sampling methods – as occurred in the regular computer data editing process.

4. The 1980 census did not employ any sampling methods (because of concerns about their legality), but did use statistical methods of imputation. Hogan Decl. ¶ 46 (JA 270); Imputation in the 1980 Census, Nov. 4, 1982 (JA 98); 1980 Census Imputation of Population Characteristics, Feb. 5, 1988 (JA 211); Bailar *Orr* Aff. ¶¶ 3, 8-9 (JA 88, 90-91); *see also 1980 Procedural History* 6-28, 6-30 (AR C00415, 418). As in previous censuses, the Bureau concluded that imputation was necessary to address "incomplete data" resulting from "partial enumeration, respondent refusal or other nonresponse, clerical handling (e.g., coding) of questionnaires and electronic processing of the questionnaires." Imputation in the 1980 Census, *supra* (JA 99); *see 1980 Procedural History* 6-28 (AR C00415) (imputation necessary

when "no interview was possible or there had been a mechanical failure in the system"). To address missing population data, Bureau statisticians explained, they could either assume a "zero" in the unit, or use a statistical methodology to assign some other, more likely value to the unit: in this sense, imputation "takes place either implicitly or explicitly." Imputation in the 1980 Census, *supra* (JA 99).

The State of Indiana sued the Census Bureau after the 1980 Census, because the use of hot-deck imputation had shifted a House seat from Indiana to Florida. *Orr v. Baldridge*, No. IP-81-604-C, slip op. (D. Ind. July 1, 1985) (JA 110-19). Indiana's complaint asserted that the use of imputation was improper because (1) it constituted "sampling" prohibited by 13 U.S.C. § 195, and (2) its use was arbitrary and capricious for reasons independent of § 195. JA 112. Consistent with its longstanding position, the Bureau argued that "the sampling procedures prohibited by the Census Act and the imputations performed in 1980 are two completely different procedures, based upon totally distinct principles and serving equally distinct purposes." Bailar *Orr* Aff. ¶ 12 (JA 92). Indiana's own expert, Dr. Donald Rubin – the same expert employed by appellants in the instant case – submitted an affidavit agreeing that hot-deck imputation is not "sampling." Rubin *Orr* Aff. ¶¶ 4-5, 7 (JA 297-98) (agreeing that "sampling" as used in § 195 refers to "probability sampling," and that "the hot-deck imputation technique used in the 1980 Decennial Census . . . is not a method of probability sampling"). The Court agreed:

> Sampling is used where a scientifically selected set of units can be used to represent the entire population from which they are drawn. Inferences about the entire population can be based on sample results. Imputation, on the other hand, is a procedure for determining a plausible value for missing data. Imputation is used in both sample surveys and census with the goal

> of achieving as complete as possible an enumeration of the sampled or population units.

JA 114. The Court also rejected Indiana's claim that the use of imputation is arbitrary and capricious. To ignore units whose occupancy status remained undetermined after contact efforts ceased, the Court explained, would be "the equivalent of imputing zero or no persons," JA 112, which would create "known error" because the Bureau knew from extensive research that a significant number of those units were in fact occupied. JA 118; *see* Bailar *Orr* Aff. ¶¶ 17-23 (JA 94-97) (citing studies).

5. The 1990 census again did not take any "sampling" of the population, but employed the now-standard process of imputation in the final editing and tabulation of individual records. *See* Summary of the 1990 Census Imputation Procedures, Oct. 3, 1994 (Memo #BB-11) (JA 144-49); Hogan Decl. ¶¶ 52-57 (JA 273-75). The amount of imputation necessary in the 1990 census was dramatically reduced compared to 1970 and 1980, as well as 2000, evidently for two reasons. First, the Bureau was able to institute better questionnaire control and more clerical editing procedures, including follow-up telephone calls, to correct errors in records identified before final tabulation. Hogan Decl. ¶ 53 & n.10. Second, Bureau researchers believe that strong incentives given to enumerators not to turn in questionnaires lacking count information caused a certain amount of "field imputation" – i.e., enumerators making a nonstatistical "best guess" when follow-up was unsuccessful. Imputation in the 1990 Census – Coverage Implications, Aug. 31, 1992 (Memo #BB-7) (JA 128).

The 1990 census was the first to employ what is referred to as "status imputation." Memo #BB-11 (JA 143-44); Ho-

gan Decl. ¶¶ 54-56 (JA 274-75).[3] Past censuses had employed "household size imputation" (where the unit was known to be occupied, but the number was unrecorded or unclear) and "occupancy imputation" (where the data record did not clearly identify whether the unit was occupied or vacant, imputation was used to assign status of vacant or occupied). Because of new address centralization procedures, the Bureau in 1990 for the first time faced the occasional need to edit records that reflected addresses for which the Bureau ended up with no data record at all. Hogan Decl. ¶ 55 (JA 274).

Prior to the 1990 census, the Bureau maintained no central address list; address registers for each ED were maintained in local census offices. *Id.* In 1990 the Bureau began to work with its own computerized and centralized list of addresses with valid housing units called the Address Control File ("ACF"). *Id.* At the same time, however, local offices continued to maintain their own list of units, called the Census Control File ("CCF"). *Id.* ¶ 53 n.10 (JA 273). The virtue of the system was that matching the lists helped detect address problems sooner than was possible in earlier censuses, *id.* ¶ 54 (JA 273), but the dual lists also created a new problem: matching millions of addresses obviously could not be done with perfection, and at the end of the process, during final editing and tabulation, the Bureau would at times come across an address on its ACF list that was not included on the local CCF, and thus for which the local office had reported no information. *Id.* Given that there was sufficient information regarding the existence of a valid unit at the address to have included it initially on the ACF, the Bureau did not automatically assume in every instance that the unit did not exist and should be deleted from the ACF.

[3] Appellants now concede that the 1990 census included status imputation, Utah Br. 8, correcting their expert's mistake, Wolfson Decl. ¶ 17 n.4 (JA 45).

Instead, the Bureau used hot-deck imputation to determine whether the unit should be deleted from the list and, if not, whether to assign a status of "vacant" or "occupied." Memo #BB-11 (JA 143-44).

B. Imputation In The 2000 Census

As a result of this Court's decision in *Department of Commerce v. House of Representatives*, 525 U.S. 316 (1999), plans for the 2000 census proceeded in two distinct phases. The first plan included sampling and imputation; the second plan excluded sampling, but continued the decades-old use of other statistical methods, including hot-deck imputation.

1. *Imputation In The Initial 2000 Census Plan.* As elaborated in *House of Representatives*, the Bureau initially planned to use two types of sampling in the 2000 census. One type was to be employed in the Nonresponse Follow-Up ("NRFU"), which takes place after the return of initial census mailings. *Id.* at 324. The Bureau expected about a 67 percent mailing-response rate, leaving about 33% of units initially nonresponding. *Id.* Unlike in the 1980 and 1990 censuses, however, the Bureau did not intend even to try to contact directly every nonresponding housing unit with its follow-up procedures. *Id.* Instead the Bureau planned to "sample" a "statistically representative" portion of the nonresponding units in each census tract, leaving in most cases 10% of the population uncontacted.

While definitively planning to take only a representative sample of the initially nonresponding units, one question the Bureau had not yet resolved was how it would derive values for the remaining 10% of the units. One proposal being considered was to use hot-deck imputation to assign values to the remaining 10%: a different donor would be selected from among *the sampled* nonrespondents for each of the remaining nonresponding units. A Comparison of Alternative Estimation Methodologies for Census 2000 (AR C01644,

C01646); Theory and Application of Nearest Neighbor Imputation in Census 2000 (AR C01651). Under this proposal, a much greater portion of the population would have been enumerated through imputation than in other censuses – 10% versus less than .5% – but only because the *sampling* aspect of the plan ensured that the donor units would be properly representative of the uncontacted population. *Id.*; *see* Rubin Decl. ¶¶ 16-17 (JA 60) (sampling "ensures that we can draw conclusions about the unobserved units in the population that from the observed units in a scientific manner").

Like the 1970 census, the initial plan for the 2000 census demonstrates how imputation can be used in conjunction with a *representative sampling* of the population to derive values for missing population data. But because imputation used on such large scales without a representative sampling would not likely reflect the actual population reliably, the Bureau responded to the invalidation of the sampling aspects the plan by returning to its traditional practice of using imputation only for the tiny segment of the housing unit records that, at the end of massive efforts to contact every housing units, have missing or unclear data. Hogan Decl. ¶¶ 14, 58 (JA 255, 275-76).

2. *Imputation In The Final 2000 Census Plan.* The Bureau's initial plan for the 2000 census, which would have significantly limited the amount of post-mailing follow-up efforts, was invalidated on January 25, 1999. From that point forward the Bureau had just over a single year to devise a plan, and assign human and technical resources, for the massive new task of reaching the approximately 15,000,000 housing units it had expected to leave uncontacted as a result of the sampling procedure. *See* Theory and Application, *supra* (AR C01647) ("Revised plans for the census now reflect the increased workload and time requirements to follow-up roughly 15,000,000 more nonresponding housing units."); Hogan Decl ¶ 62 (JA 279).

(a) The Bureau's revised plan began, as it had initially, with the "Master Address File" ("MAF") – the successor to the ACF used in 1990. To understand the role of imputation in the census, it is important first to understand the significance of the MAF to census operations.

As the Bureau's centralized and computerized inventory of all living quarters in the United States, the MAF "serves as the basic control for the census." Census 2000 Operational Plan § VI (Dec. 2000) (AR C00245). The Bureau first created the MAF by merging the 1990 ACF with the Postal Service's comprehensive list of mailing addresses, called the Delivery Sequence File ("DSF").[4] Throughout the 1990s the Bureau repeatedly merged the MAF with the regularly-updated DSF. In addition, the Bureau tried to maximize the MAF's accuracy by conducting its own field operations and by enlisting the assistance of local and tribal governments in a wide variety of ways. The local assistance program included massive local government reviews to confirm the accuracy of listed housing units – over 8400 local and tribal governments reviewed the list in 1998 and 1999 (local government participation was especially important for "non-city-style" address, e.g., rural postal routes and general delivery addresses). All of these steps – and still others – sought to ensure that to the extent possible the MAF included all valid housing units, without including invalid units.[5]

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[4] The description in the text of the Bureau's address list updating process is based on the Census 2000 Operational Plan § VI (Dec. 2000) (AR C00245); and The Census Bureau's Master Address File (MAF) – Census 2000 Address List Basics (March 1999) (AR C01490).

[5] Appellants claim that the MAF "concededly contains a large number of addresses that do not represent housing units." Utah Br. 8 (citing AR C01585). Here is what the cited document actually says: "As a result of the [DMAF] building and updating process, addresses are included in the DMAF that do not uniquely identify a housing unit as of April 1, 2000." Specification of the Kill Universe on the Decennial Master Address File for Census 2000, Dec. 21, 2000 (Memo #D-13) (AR

(b) The MAF was converted to the Decennial Master Address File ("DMAF") in July 1999. The DMAF became the basis for all the 2000 enumeration functions. The Bureau continued to revise the DMAF up to the final tabulation of returns. Specification for Reinstating Addresses Flagged as Deletes on the Hundred percent Census Unedited File, Nov. 7, 2000 (AR C01579); *see* Hogan Decl. ¶ 69 (JA 283).

The DMAF was the basis for mailing and follow-up programs in the 2000 census. Thus if an address did not make its way onto the DMAF before the census process, and was not added by a respondent or an enumerator somewhere in the process, no record for that address was processed in the final tabulation. Conversely, if an address *did* appear on the DMAF, then at the end of the process the Bureau would expect a record to be associated with the address. The record could identify the status as "nonexistent/delete" if, for example, the Bureau received a questionnaire for that address establishing that the address no longer contained a valid residential unit, or if an enumerator could not locate a unit during the follow-up coverage programs, or determined that the unit was no longer a housing residence, or had been demolished or was condemned. AR C00999; Hogan Decl. ¶ 69 (JA 283). If an address that had been identified on the DMAF after the exhaustive MAF update and revision process did not have *any* data record associated with it at the end of the process (i.e., it was not identified as occupied, vacant or nonexistent), the Bureau did not plan to assume automatically that the address was actually nonexistent and thus to be deleted, but instead planned to use hot-deck imputation to

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C01585). That is of course true – nobody contends that the DMAF was a perfectly accurate list of every single housing unit in the United States. The document does not state that the final DMAF had a large *proportion* of addresses that were not valid housing units. And the fact that the DMAF was not perfect is exactly why the Bureau employed extensive follow-up procedures after the mail-out. *See infra* at 14-15, 16 n.7.

assign a status to the address and, if assigned a status of occupied, to enumerate the unit. *See infra* at 16-17.

(c) The 2000 census in execution was a colossal endeavor, involving more than 147 million paper questionnaires and some 1.5 billion pages of printed material. At peak operation the Bureau was processing about 3.3 million different forms per day. Hogan Decl. ¶ 8 (JA 251).

The first stage of the census included not only the familiar mail-out/mail-back program, but also opportunities for respondents to pick up questionnaires at public locations and to respond by telephone and Internet. *See United States Census 2000* § IX (Dec. 2000) (AR C00266-80); Hogan Decl. ¶¶ 70-74 (JA 284-86). This stage also included two related contact methods for enumerating people in remote or inaccessible areas: the list/enumerate process, where enumerators created an address list as they canvassed an assigned area and conducted interviews; and enumerate/update, where enumerators started with an address list, which they updated as they canvassed and conducted interviews. *Id.*

The next stage involved two forms of follow-up. One form, the "Coverage Edit and Telephone Follow-up" ("CETFU"), focused on responses that *were* received by the Bureau in the first stage. CEFTU employed a computer program to check individual responses for discrepancies in count information. *Id.* If the computer identified a response with inconsistent count information, a telephone agent tried to resolve the problem by calling the household. *Id.*

The other form of follow-up constituted two different efforts to contact directly DMAF-listed units that did *not* return forms at stage one. The first of these was the Non-response Follow-Up ("NRFU"), during which enumerators made up to six attempts to contact (either personally, by phone, or by proxy, e.g., neighbor or building manager) and enumerate every single nonresponding address. *Id.* NRFU was conducted from April to July 2000. The second direct contact

follow-up effort, conducted in July and August 2000, was the Coverage Improvement Follow-up ("CIFU"). *Id.* This was a process for interviewer-rechecks of certain DMAF addresses that came through the first stage and NRFU classified as "nonexistent." *Id.* In this process, census staff attempted to visit addresses added to the DMAF during the process by enumerators, the Postal Service, and others, but for which no response had been received; addresses for mail returns that were marked as received but for which no data was captured (i.e., lost or blank forms); and addresses for which responses reported the unit as nonexistent, but which the Postal Service did not confirm as undeliverable addresses. *Id.*

After all this data collection activity was completed, the DMAF list was, in essence, merged with all the records returned, creating the "preliminary Hundred Percent Unedited File" ("HCUF"). Despite the intensive DMAF correction and response follow-up efforts, as of August 14, 2001, 0.4 percent of the addresses from the DMAF were "unclassified" on the HCUF – i.e., no data records were associated with them – and others were classified as "occupied" but had missing or conflicting population count information. Census 2000 Specifications for Imputing Housing Unit Status and Population Counts, Sept. 26, 2000 (Memo #Q-34) (JA 152); Census 2000 – Missing Housing Unit Status and Population Data, February 28, 2001 (Memo #B-17) (JA 188).

(d) At the very end of the census operations, when the individual records were being processed for final tabulation, the Bureau used a version of the "hot-deck imputation" process employed in the previous four censuses to edit those unclassified, incomplete or inconsistent records.[6] The Bureau used imputation to enumerate in three circumstances.

[6] The particular "hot-deck" methodology employed in the 2000 census is set forth in Memos #B-17 (JA 184) and #Q-34 (JA 152). It included several refinements that improved its accuracy over previously used hot-deck methods. Hogan Decl. ¶¶ 38, 59 (JA 266, 276-77).

Household size imputation was employed when the address record indicated that the unit was occupied, but contained incomplete or inconsistent information as to population count. *Occupancy* imputation was used when the record made clear the address contained a residential unit, but did not sufficiently indicate whether it was occupied or vacant. The Bureau would first impute to the unit a status of vacant or occupied, and, if it assigned the latter, used imputation to enumerate household size. *Status* imputation was used for those addresses on the HCUF that were still unclassified at the end of the process. Initial Research on Count Imputation in Census 2000 (Memo #110) (JA 444).[7]

Though it is studiously avoided in appellants' factual recitation, subsequent Bureau research has produced significant additional information about many of the records for which imputation was necessary. With respect to status imputation, Bureau "Memo #110" reports that a full *75%* of the addresses for which a status was imputed were actually "valid housing units," i.e., units "not on the DMAF by the time questionnaires were mailed out or delivered, but . . . added either by enumerators during field operations or by respondents themselves." JA 445-47.[8] Memo #110 explains

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[7] Missing count information was not handled solely by imputation, so long as the missing data was discovered early enough in the process. When it discovered part way through the NRFU that a large number of questionnaires were being returned with no population count, the Bureau specifically implemented a process for identifying those records and conducting field follow-up. Memo #110 (JA 448 n.2). Obviously, however, not all incomplete records could be caught in time, and not all follow-up efforts would be successful.

[8] For this reason appellants are flatly incorrect when they describe the "unclassified" addresses on the HCUF as "phantom" units, Utah Br. 8, on the asserted ground "the Bureau has no information as to whether the address in question represents an existing housing unit," *id*. at 33. Appellants ignore not only the evidence in Memo #110 *now* establishing to a certainty that the vast majority of units actually exist, but also the extensive evidence the Bureau had about the units *at the time*. The un-

that the status of these units were incorrectly identified as "unknown" on the HCUF because (1) a data corruption error, and (2) the late receipt of records from the CIFU process, led to the computer program's failure to associate these valid units with their appropriate data records. JA 446-47; *see* J.S. 25a ("the study reveals that these units were clearly valid residences that were simply not captured because of errors at the data-capturing stage").[9]

With respect to occupancy imputation, Memo #110 explains that over 90% of the records requiring occupancy imputation were returns with inconsistent information (i.e., the summary states "vacant" but person information is provided). JA 447. Likewise, over 95% of the household-size imputation cases reflected returns that "clearly indicated the unit was occupied," but had "[i]nconsistent or missing data" with respect to the population count. *Id.* at 448. Summarizing its analysis of all imputations in the 2000 census, Memo #110 reports:

> The team's research confirms that most of the count imputations performed in Census 2000 are attributable to housing units that have been determined to exist, but whose data were not included in the totals through a variety of reasons. These cases have been appropriately included in the census. If they had not

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classified addresses on the HCUF were there only because they were initially on the DMAF (which was exhaustively reviewed and revised for accuracy), or were specifically added to the DMAF by an enumerator or respondent, all of which gave the Bureau substantial information about the likely existence of the units. Hogan Decl. ¶ 15 (JA 256). If anything, the proper presumption is that the units do exist – a presumption confirmed by Memo #110.

[9] Almost all of the remaining "unclassified" units – 22% of the total of unclassified units – reflected addresses from the DMAF with blank data records associated (JA 447), again suggesting that processing errors simply lost information on what were also likely valid units (since the addresses were derived from the carefully updated DMAF).

> been included in the count imputation process, these cases would represent individuals or housing units that should have been included in the census, but who were left out because of incomplete or inconsistent data or the inability to locate appropriate data records due to data processing issues.

Memo #110 (JA 449-50).

The Bureau employed imputation in the 2000 census consistent with its long-held view that the only alternatives for handling missing or inconsistent data are to assign the most plausible value, or to assign a value of zero. Hogan Decl. ¶ 10 (JA 252); *see supra* at 7-9. In either case, the Bureau's statistical experts have long contended, the imputation of a value occurs. *Id.*; Imputation in the 1980 Census, *supra* (AR C00616). The empirical question is which form of imputation is more accurate. Appellants believe that imputing zero is the more statistically accurate approach, Utah Br. 28-29 (units lacking information after coverage efforts "most reasonably can be assumed to be unoccupied or nonexistent"), but they are wrong. Appellants' view is premised on the incorrect understanding that imputation occurs only when the Bureau was not able to enumerate a unit as occupied "even after as many as six follow-up visits." *Id.* at 28. In fact, as the administrative record makes clear, imputation is often necessary because clerical and data errors lead to loss or confusion in records that were otherwise properly enumerated. *See supra* at 3-4, 6, 9, 16-18. Thus Bureau research has conclusively established that "a significant proportion of returns with questionable or incomplete data or unresolved status are actually valid, occupied housing units." Hogan Decl. ¶ 10 (JA 252) (citing studies). It necessarily follows, as those studies and dozens of others have shown, that when a record is incomplete, inconsistent or unclassified, and no other follow-up efforts are feasible, imputing data from another unit in close geographic proximity leads to

a much more accurate count of the local population than does ignoring the record altogether. Bailar *Orr* Aff. ¶ 18-23 (JA 94-97) (citing studies); Hogan Decl. ¶¶ 10, 31, 51 (JA 252, 263, 271-72) (citing studies).[10]

(e) In addition to time-tested imputation procedures, the Bureau used several other traditional statistical methods in the 2000 census to resolve problems identified in returns. Hogan Decl. ¶ 64 (JA 280). For example, the Bureau frequently came across multiple responses for what appeared to be the same residence with conflicting population data. The Bureau could not know with certainty which form was accurate, but it relied on a sophisticated algorithm for selecting which response to include in the enumeration. *Id.*

(f) The editing of the HCUF records – including the process of imputation for the inevitable (but relatively few) incomplete, inconsistent, or unclassified records remaining at the end of all census operations – resulted in the Hundred Percent Edited File, which provided the basis for the final apportionment numbers delivered to the President by the Secretary of Commerce.

C. Proceedings Below

1. Though Congress has conveyed to the Secretary much of its discretion over the manner for determining the enumeration of the population, Congress did not leave the task wholly unconstrained. In addition to the proscription on

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[10] Appellants' description of the accuracy-improvement record of imputation errs in yet another fundamental respect. Appellants assert that while unclassified units are almost certainly *un*occupied (which is incorrect for the reasons stated in text), the "donor" units used for imputation "are unquestionably *occupied*," and thus are not "representative of the estimated units." Utah Br. 28-29 (emphasis added). Appellants again simply misunderstand the imputation process: the donor units are *not* "unquestionably *occupied*" – to the contrary, the "donor" records used in status imputation include records classified as "vacant" and as "nonexistent." Memo # Q-34 (JA 154-55).

sampling, Congress devised a specific structure for the timing of various census and apportionment events. The Census Act requires the Secretary to take a "census of the population" as of "the first day of April" in every decennial year. 13 U.S.C. § 141(a). The Secretary is required to complete the census and report to the President the "tabulation of total population by States" within nine months of the census date. *Id.* No later than one week after the beginning of the first session of the Congress following the census, the President is required to "transmit to the Congress a statement showing the whole number of persons in each State . . . and the number of Representatives to which each State would be entitled" under the statutorily prescribed method for calculating the apportionment. 2 U.S.C. § 2a(b). The law provides that "[e]ach State shall be entitled . . . to the number of Representatives shown" in the President's statement to the Congress, *id.* § 2a(b), and the Clerk of the House is required to send a Certificate of Entitlement to the Governor of each State reflecting that number within fifteen days after receipt of the President's statement, *id.* The Census Act contains no provisions authorizing the President to revise the apportionment for any reason after the date specified in the statute.[11]

2. Pursuant to that statutory reapportionment scheme, the Secretary of Commerce reported to the President the final census tabulations on December 28, 2000. Applying the statutorily-prescribed "method of equal proportions" to the census numbers, the President determined that North Carolina was entitled to one additional Representative for a total of thirteen, and Utah remained entitled to three. On January 4, 2001, the President transmitted his statement to Congress reporting the new apportionment, and on January 16, 2001, the Clerk of the House transmitted to North Carolina a Cer-

[11] By statute enacted in 1997, Congress created a specific mechanism for challenging "the use of sampling or any other statistical methodology" *prior* to the conduct of the census. *See infra* at 29-30.

tificate of Entitlement officially communicating North Carolina's lawful entitlement to 13 Representatives. JA 453.

3. Utah has made two legal efforts to reverse the 2000 apportionment and obtain by judicial order what traditional census practices did not provide: an additional seat in the House of Representatives. The first challenge argued that the Bureau unlawfully elected to count federal employees living overseas – primarily military personnel and their dependents – while excluding other Americans living abroad. That challenge was rejected, and this Court affirmed. 122 S. Ct. 612 (2001). On April 13, 2001, appellants filed this separate action. Another three-judge district court rejected that challenge as well. J.S. 1a. On January 22, 2002, this Court accepted Utah's appeal, postponing further consideration of jurisdiction until the hearing of the case on the merits.

SUMMARY OF ARGUMENT

I. There is a threshold jurisdictional problem with this case. Appellants' asserted injury is that the President assigned Utah one less Representative than it was entitled to, because the Census Bureau used improper methods to identify the States' respective population totals. For appellants to obtain relief, the President would have to revise the apportionment and assign Utah a new seat. A plurality of this Court held in *Franklin v. Massachussetts*, 505 U.S. 788 (1992), that even if the President could not be directed by a court to do so, an apportionment injury is still redressable because it can be assumed that the President would act in accordance with a judicial declaration as to the proper census methodology. But there is a problem *Franklin* did not address: simply put, the President lacks any lawful authority to shift House seats among the States after the apportionment is finalized. The statute explicitly states that apportionment may be revised only by the next self-executing apportionment cycle, or by a supervening act of Congress. Thus even if the President wanted to give Utah another House seat in

accordance with an opinion of this Court on census practices, he has no lawful authority to do so. For this very reason Congress created the opportunity to challenge statistical operations in the census before census operations begin. Having declined to avail themselves of that opportunity to challenge imputation, appellants have left this Court with no way to ensure that their injury is redressed, and thus no jurisdiction over the case.

II. Crossing the threshold to the merits serves appellants no better. The Bureau's practice of enumerating an individual housing unit whose record has inconsistent, unclear or missing data by imputing to it the population count of a single nearby responding unit has been used in the decennial census for the last forty years, with the full knowledge of the Congress and the States. Hot-deck imputation is not the statutorily-barred "statistical method known as 'sampling,'" 13 U.S.C. § 195, which is the entirely different process of selecting a subset of a larger aggregate that is expected to be representative or a model of the whole. Hot-deck imputation involves no methodical selection of any representative subset of the population; rather, the characteristics of one unit are simply attributed to another. Because the two processes are used for different purposes, acknowledging the difference assuredly does not lead to an "end run" around *House of Representatives*. Nor does appellants' theory of "sampling" distinguish between size and status/occupancy imputation. Their attack on the latter forms reduces to the claim that they are bad policy because the Bureau has no evidence that units or persons actually exist, which is demonstrably incorrect: the units are in the Bureau's records because they were added to the DMAF as valid housing unit addresses, and subsequent Bureau research ignored by appellants has conclusively shown that the vast majority of records for which status was imputed actually are valid housing units.

III. The use of hot-deck imputation is well within Congress's wide discretion under the Constitution to devise the manner in which the actual enumeration of the whole number of persons in each State will be determined every decennial year. The procedures employed in the 2000 census are consistent with the phrase "actual Enumeration," in the context of its usage in the Constitution, which is best read to mean identification of the actual population number, and not a particular head-counting method of identifying that number. It is true that the actual population count cannot be determined with perfection, as appellants point out, but that is precisely why this Court recognized in *Wisconsin v. New York* that Congress need only adopt methods with a "reasonable relationship to the accomplishment of an actual enumeration of the population." 517 U.S. at 19. But the Court need not reach all of those issues to decide this case: appellants' only real argument that the phrase "actual Enumeration" excludes imputation is based on historical evidence suggesting that gross population estimates were not considered during the founding era to be consistent with an actual population enumeration. Even if true, imputation is not a gross estimate, but is a highly reliable, non-subjective process of enumerating individual housing units on a unit-by-unit basis, consistent with methods of enumeration common from the early days of the census to today.

ARGUMENT

I. APPELLANTS LACK ARTICLE III STANDING BECAUSE THEIR ASSERTED APPORTIONMENT INJURY IS NOT REDRESSABLE

A federal court has authority to adjudicate a case or controversy under Article III only if the plaintiff alleges and proves an injury that is "likely to be redressed by the requested relief." *Allen v. Wright*, 468 U.S. 737, 751 (1984); *see Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 (1992). "[R]elief that does not remedy the injury suffered cannot

bootstrap a plaintiff into federal court; that is the very essence of the redressability requirement." *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 93-95 (1998). In particular, when redressability "depends on the unfettered choices made by independent actors not before the courts and whose exercise of broad and legitimate discretion the courts cannot presume either to control or to predict," *Lujan*, 504 U.S. at 562, the requirements of Article III standing are "substantially more difficult to establish," *id.*

Appellants claim injury – the loss of a seat in Congress – resulting from the President's decision to rely on census figures that included a minuscule proportion of housing-unit records that had been enumerated by the use of hot-deck imputation. To remedy that asserted injury, appellants seek an order directing the Secretary to transmit to the President a revised census and apportionment report excluding persons enumerated by hot-deck imputation methods. JA 38-39. The problem is this: even if the President receives a new report from the Secretary, he simply has no lawful authority to revise the apportionment. *Cf. House of Representatives*, 525 U.S. at 332 ("[I]t is certainly not necessary for this Court to wait until the census has been conducted to consider the issues presented here, because such a pause would result in extreme – possibly irremediable – hardship."). Explicitly recognizing the inherent problem with judicial challenges to census operations once the apportionment is complete, Congress in 1997 enacted a statute specifically providing that lawsuits challenging the use of "any statistical methodology" in the census could be brought before census operations begin. *Infra* at 29-30. Neither appellants, nor anybody else, challenged the use of imputation at that time, when relief was available, and now their asserted injury is remediable only by an act of Congress.

A. The President Would Have No Authority To Revise The Apportionment On The Basis Of A New Census Report From The Secretary

The deadlines prescribed for executive action under the apportionment statute are strict and substantive, designed to provide certainty and finality to a federal process that has immediate impacts on the States – going directly to the terms of their participation in the national government. *See Franklin*, 505 U.S. at 791-92 (reapportionment process made "virtually self-executing" to avoid delays in apportionment). To achieve that much-needed finality, the statute specifies a particular date every ten years by which the President is required to make his apportionment determination and deliver it to Congress – for the 2000 census, January 7, 2001. Once that statement is transmitted, the statute removes from the President all discretion and authority over further apportionment in that cycle: each State "shall be entitled" to the number of Representatives specified "in each Congress thereafter *until the taking effect of a reapportionment under this section or a subsequent statute.*" 2 U.S.C. § 2a(b) (emphasis added); *see Franklin*, 505 U.S. at 799 ("the President's personal transmittal of the report to Congress . . . settles the apportionment"). Under the plain terms of the statute, only two sources may rescind a State's "entitlement" to the apportionment determination made pursuant to the statute: (1) the *next* decennial reapportionment, or (2) a new act of Congress adopted in the intervening period. There is no provision authorizing the President to revise or rescind the apportionment determination for any reason before the next cycle, and none can be implied. *See National RR Passenger Corp. v. National Ass'n of RR Passengers*, 414 U.S. 453, 458 (1974) ("'When a statute limits a thing to be done in a particular mode, it includes the negative of any other mode.'" (quoting *Botany Mills v. United States*, 278 U.S. 282, 289 (1929)); *Continental Cas. Co. v. United States*, 314 U.S. 527, 533 (1942) ("Generally speaking, a 'legislative affirmative de-

scription' implies denial of the non-described powers" (quoting *Durousseau v. United States*, 6 Cranch 307, 314 (1810)).[12]

The only other possibility, in theory, might rest on the ground that a judicial order may suffice to authorize a federal officer to take an action beyond the authority conferred by a statute. Federal agencies and government officials may at times be compelled by court order to correct an error by revising some action even after the expiration of a statutory deadline for the action. There are at least two crucial distinctions here. First, in the typical action the agency or lower governmental official is a party to the action, and thus can be made subject to the judicial order of empowerment. *See Franklin*, 505 U.S. at 802. The President, by contrast, is not a defendant to this action subject to any judicial order granting him suprastatutory authority to revision the apportionment, nor is it clear he *could* be made a defendant, *id.* Second, the statute at issue here is far from a typical scheme for organizing administrative agency action. By its general nature the matter at issue calls for the highest level of respect for the States' interest in finality. *See Franklin*, 505 U.S. at 800 (observing that Congress's very inclusion of the President as the constitutional officer responsible for finalizing apportionment "makes for greater permanence, which is one of the major virtues to be desired in such a statute"). And by

[12] The Census Bureau also specifically allows for states and localities to bring post-census "challenges" to the results of the census for over two years, which may result in the "correction[]" of population numbers. Census 2000 Count Resolution Question Program, 66 Fed. Reg. 35588 (July 6, 2001). Those corrections, however, are *not* used to revise the count for apportionment purposes, *id.*, but are instead used only in post-census population calculations, *id.* But an error is an error, whether it is identified as the result of a lawsuit, an administrative challenge, or the Bureau's own self-review process. It is telling that the President, acting through the Bureau, has never assumed he has the authority to shift House seats if an error affecting apportionment is identified.

its specific terms the statute actualizes that interest, specifying that only an act of Congress can revise an apportionment prior to the next self-executing cycle.[13] Those terms prohibit the President himself from shifting House seats between States between reapportionment cycles; they just as surely suggest that courts ought not tread on the same politically volatile ground to accomplish the same result.

B. *Franklin* Does Not Provide An Adequate Basis For Standing In This Case

The district court concluded that appellants' injury is redressable on the ground that, as this Court held in *Franklin*, the courts could "assume that the President . . . would abide by an authoritative interpretation of the Constitution and the Census Act." JS App. 12a. But even on that assumption, appellants' injury cannot be redressed because the President simply lacks the authority to revise the apportionment once that apportionment is finalized.

None of the opinions in *Franklin* addressed this problem. That may be because standing was not directly addressed by any of the briefs in *Franklin*. *Cf. Hohn v. United States*, 524 U.S. 236, 251-52 (1998) (Court is "less constrained to follow precedent where, as here, the opinion was rendered without full briefing and argument"). In any event, even without questioning the *Franklin* plurality's basic assumption that the President could be expected to act in accordance with a judicial opinion on census practices, the issue here is whether the President could shift a House seat from one State to another even if he wanted to. That question was not addressed in *Franklin*, and the answer is clear: if the statute imposes a self-executing limitation on that authority, it is impossible to

[13] The provision also ensures that States, which participate much more directly in the functioning of Congress than they can in the operation of the unitary Executive, have some say in the unprecedented event of an "off-year" reapportionment.

assume the President will alter the apportionment and provide appellants relief.[14]

An example further illustrates the point. As a majority of the Court in *Franklin* agreed, the President is entitled to play an active role in the conduct of the decennial census process throughout the process – he may even instruct the Secretary to "reform the census . . . after the data are submitted to him." *Franklin*, 505 U.S. at 799. Thus, assuming the Secretary were, by order of a court, to submit new data to the President disregarding all returns with imputations, if the President has *any* lawful authority to revise the apportionment, he would actually have *at least* two options: he could order a new apportionment based on the new data, as appellants are seeking, or, alternatively, he could conclude that the data is too incomplete and that further efforts at data recovery or respondent contact should be made (especially in light of extensive subsequent research identifying the sources of record errors that led to imputation, *see supra* at 16-18). If the statutory deadlines are now legally meaningless, it is hardly clear why the President should opt for the former,

[14] The force of *Franklin* as a precedent on redressability in this context is unclear even on its own terms. A plurality of four Justices, in an opinion by Justice O'Connor, found redressability on the assumption that the President would abide by an "authoritative interpretation of the census statute and constitutional provisions," 505 U.S. at 803, though as noted the plurality did not consider whether the President had authority to act. Justice Scalia flatly disagreed that the assumption was sufficient to establish Article III redressability, and therefore concluded that he should not reach the merits. *Id.* at 825. Finally, four other Justices, in an opinion by Justice Stevens, did not join in the plurality's reasoning, but implicitly found standing on an entirely different basis: Justice Stevens' opinion viewed the action of the Secretary in delivering the census report to the President as a "final agency action" under the APA, *id.* at 808-16, and thus the plaintiffs implicitly had standing to sue and seek relief directly from the Secretary. Justice Stevens' analysis did not address whether the President might be separately barred by the statute from issuing a new apportionment determination.

clearly inaccurate count, when the latter option for a more accurate count would be available to him in the exercise of his discretion. Indeed, the Census Bureau itself could engage in such activities before sending a new report to the President.

The true answer, of course, is that because the statutory deadline has passed and the apportionment is finalized, the President and the Bureau lack the authority to rewrite the apportionment numbers for any reason. The only way to challenge statistical methods to be used in the census is before the census begins.

C. Parties Challenging The Use Of Statistical Methods In The Census Must Bring Pre-Census Challenges

In 1997, Congress enacted a statute that is explicitly designed to steer challenges just like this one into court *before the census starts*, precisely because Congress believed courts would not be properly situated to provide relief once the apportionment is complete. Pub. L. 105-119, Title II, § 209, 111 Stat. 2480, reprinted following 13 U.S.C. § 141 (West Supp. 2001). The text of that law states:

> [T]he decennial enumeration of the population is a complex and vast undertaking, and if such enumeration is conducted in a manner that does not comply with the requirements of the Constitution or laws of the United States, *it would be impracticable for the States to obtain, and the courts of the United States to provide, meaningful relief after such enumeration has been conducted*.

Id. § 209(a)(7). Congress therefore created a cause of action that permits only *prospective* relief against the use of statistical methods, authorizing any "aggrieved person" to bring an action to "obtain declaratory, injunctive, and any other appropriate relief against" the use of a challenged statistical

method. *Id*. § 209(b). Congress defined an "aggrieved person" to include "any resident of a State whose congressional representation or district could be changed as a result of the use of a statistical method challenged in the civil action." *Id*. § 209(d)(1).[15] Finally, Congress required the Secretary to produce a pre-census report on operations, and provided that the report "shall be deemed to constitute final agency action regarding the use of statistical methods in the 2000 decennial census, thus making the question of their use in such census sufficiently concrete and final to now be reviewable in a judicial proceeding." *Id*. § 209(c)(2). Congress even established a special framework to expedite judicial review of such claims. *Id*. § 209(e).

These new statutory procedures provided ample opportunity to challenge the use of any statistical methodology in the 2000 Census, ensuring that the courts could adjudicate such claims before the census was conducted, and avoiding the kinds of severe electoral dislocations that would accompany judicial relief in a post-census lawsuit of this kind. None of the appellants availed themselves of those options, nor did any other challengers. The apportionment is now final, and neither the President nor this Court can order a revision. Appellants' asserted apportionment injury is therefore not redressable, and their case must be dismissed.[16]

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[15] Persons challenging the use of imputation before the census would have had constitutional injury under the intrastate-redistricting vote-dilution theory accepted as the basis for standing to bring the pre-census challenge in *House of Representatives*, 523 U.S. at 332-34. Even though the distributive effects of imputation between states cannot be determined in advance, *see infra* note 19, imputation is more common for units in urban and rural areas, JA 129-30; AR C00383, C00424. Voters in other areas could allege that their votes are diluted in intrastate redistricting by the increase in urban and rural population counts resulting from imputation.

[16] The fact that the Court has considered apportionment cases such as *Wisconsin* since *Franklin* without addressing the redressability prob-

II. HOT-DECK IMPUTATION IS NOT "THE STATISTICAL METHOD KNOWN AS 'SAMPLING'"

The procedure in issue here is the Bureau's longstanding practice of enumerating a housing unit whose response record, at the very end of the census process, is missing, incomplete, or inconsistent, by imputing to that unit the enumeration obtained from direct contact of a neighboring unit. The statutory question is whether that procedure constitutes "the statistical method known as 'sampling,'" within the meaning of 13 U.S.C. § 195. The answer to that question is no.[17]

A. Hot-Deck Imputation Is Not "Sampling"

1. Section 195's prohibition against "the statistical method known as 'sampling'" refers to a term of art in the science of statistics. Terms of art must be given their term of art meaning. *See, e.g.*, *Corning Glass Works v. Brennan*, 417 U.S. 188, 201 (1974) ("Where Congress has used technical words or terms of art, it is proper to explain them by reference to the art or science to which they are appropriate." (internal quotation marks and alterations omitted)). The imputation procedures employed in the 2000 Census are not "sampling" as that technical term was understood at the time of § 195's enactment in 1957 and as that term continues to be understood today.

(a) The leading statistical texts of the time uniformly defined "sampling" as "the selection of part of an aggregate of

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lem raised here is immaterial. *See, e.g.*, *Lewis v. Casey*, 518 U.S. 343, 353 n.2 (1996) ("[W]e have repeatedly held that the existence of unaddressed jurisdictional defects has no precedential effect.").

[17] Even if the Court concludes that appellants have Article III standing, at a minimum their statutory claim should be barred. The structure of the Census Act as amended in 1997 implicitly limits challenges under the Act to the period prior to the beginning of the census. *Supra* at 23-30.

material to represent the whole aggregate." Frank Yates, *Sampling Methods for Censuses and Surveys* 1 (2d ed. 1953); *see* Pandurang V. Sukhatme, *Sampling Theory of Surveys With Applications* 9 (1954) ("A sampling method is a method of selecting a fraction of the population in a way that the selected sample represents the population."); Walter A. Hendricks, *The Mathematical Theory of Sampling* 12 (1956) ("A sample is a selected portion of some universe drawn to provide information about the universe as a whole."). The statistics profession has continued to treat the method called "sampling" the same way. *See* Waksberg Dec. ¶ 6 (JA 290); Peterson Dec. ¶¶ 8-9 (JA 352-53); Arlene Fink, *How to Sample in Surveys* 2-3 (1995) ("A sample is a portion or subset of a larger group called a population. . . . The[] importance [of survey samples] lies in the accuracy with which they represent or mirror the target population."); Gary T. Henry, *Practical Sampling* 11 (1990) ("[S]ample, as it is used in the [statistics] literature and in this book, means a subset of the population that is used to gain information about the population. A sample in this sense is a model of the population."); Raymond J. Jessen, *Statistical Survey Techniques* 14 (1978) ("In the broad sense a sample is any fraction of the elements in the universe. Ordinarily it is a fraction taken in a manner such that it will 'represent' the universe."); Leslie Kish, *Survey Sampling* 18 (1967) ("Survey sampling or population sampling deals with the methods for selecting and observing a part (sample) of the population in order to make inference about the whole population."); Tommy Wright, *Selected Moments in the Development of Probability Sampling: Theory and Practice*, 13 Am. Stat. Ass'n Surv. Res. Methods Newsl. 1 (July 2001) ("When examination of each and every unit in the population to know a particular population characteristic is undesirable or impractical, a *sample*, i.e., a subset or portion of the same population, may be selected to yield satisfactory information regarding the particular population characteristic.").

Common to all these definitions of "sampling" are the notions (1) that the "sample" must be a "fraction" or "subset" or "part" of the population that the sample is intended to represent, and (2) that the "sample" is selected according to some method to ensure that will be a "representative" – a "model" – of the larger population from which the sample is selected.

(b) The distinction between that statistical method and the hot-deck imputation procedures employed in the 2000 census is self-evident and fundamental. Appellants' primary theory seems to be that in hot-deck imputation, each individual "donor" constitutes a statistical "sample." Utah Br. 26. That theory is incorrect in at least two respects. First, the individual donor unit is not selected to be a model of the whole aggregate – it is only a model of a distinct individual nonresponding unit. Second, the individual donor unit is not a "subset" of the "population" it is supposed to represent, which in this case is simply another individual unit. Both points confirm the intuitively obvious: an individual donor unit is not a "statistical sample" of the larger population. At other times, however, appellants seem to conceive of the putative "sample" as the population of *potential* donor units for each unit to be imputed – i.e., the geographically proximate units contacted in NRFU. *Cf.* Utah Br. 21-22. The error is the same: those units were not "selected" in any way to be "representative" of the population to be imputed; indeed, they were not "selected" at all, they were simply all the units on which the Bureau was able to obtain a complete record in its effort to cover every single unit.

At bottom appellants' conflation of imputation with sampling rests on a simple layman's misunderstanding: the presumption that any number less than the whole is a "sample" of the whole. Utah Br. 18-22. Because imputation is used when less than every unit in the population has a recorded response, appellants believe that imputation necessarily in-

volves sampling. A leading 1953 statistical text directly addresses that misconception:

> There has in the past been a tendency to use the term sample to refer to the results of an attempted complete census in which there has been failure to obtain information from a substantial proportion of the units. Its use in this sense is strongly to be deprecated; instead the term *incomplete census* is suggested. The term *sample* should be reserved for a set of units or portion of an aggregate of material which has been selected in the belief that it will be representative of the whole aggregate.

Yates, *Sampling Methods for Censuses and Surveys*, *supra*, at 2. In other words, though any number less than the whole may be a "sample" in common parlance, it is uniformly agreed in the profession that "sampling" connotes a conscious effort to design, in advance, a survey of a subset of the population that will itself be an adequate "model" of the larger population being surveyed. *See supra* at 31-32. The donor units used in the imputation method employed in the 2000 census were not a "portion of [the population] selected in the belief that they w[ould] be representative of the whole aggregate." To the exact contrary: the donor units were the product of every effort to reach "the whole aggregate." They are only a "sample" in the vernacular sense because those complete-coverage efforts were not wholly successful, and records were lost or corrupted. It is a truism to say that the donor units constitute less than the whole; it is a fallacy to say that they therefore constitute a "sampling" of the population.[18]

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[18] In view of the foregoing, it is not necessary to distinguish between sampling and imputation on the ground that the former is random while the latter is non-random. Indeed, the random/non-random dichotomy is easily misunderstood, as evidenced by appellants' brief. Appellants spend much effort arguing that imputation, though non-random, is still

Appellants derive their mistaken view of sampling primarily by distorting a single Bureau document – the 1997 report to Congress outlining the Bureau's later-invalidated plan for the 2000 census. *See* Report to Congress – The Plan for Census 2000 (Aug. 1997) ("1997 Report to Congress") (AR C0155). According to appellants, the Bureau in that report "explained that 'a "sample" is taken whenever the whole is represented by less than the whole.'" Utah Br. 20 (quoting 1997 Report to Congress 23 (AR C0155)). But here is what the report actually says:

> *In laymen's terms*, a "sample" is taken whenever the whole is represented by less than the whole. *Among professional statisticians*, the term "sample" is reserved for instances when the selection of the smaller population is based on the methodology of their science.

AR C0155 (emphasis added). The Bureau's actual point is almost identical to the point made in the 1953 text discussed above, *supra* at 34. Appellants wreak similar havoc with another statement in this part of the 1997 report:

"sampling" because "sampling" includes both random *and* non-random methods. Utah Br. 22 & n.4, 27-29. The entire argument is a non sequitur: it does not follow from the fact that non-random *sampling* methods exist (which is true) that all non-random *statistical* methods are sampling (which is not true). In fact, our review of the sources cited by appellants, Utah Br. 22 n.4, confirms what appellants' own parenthetical descriptions explicitly suggest: every non-random method of sampling they discuss includes the distinguishing characteristics unique to *all* sampling methods, *viz.*, the selection according to some method (albeit non-random) of a subset of a population such that the subset is a model for the population (or particular portion of the population) being studied. As explained, imputation does not share those characteristics. *Supra* at 32-34; *see* Hogan Decl. ¶ 29 (JA 261-62) (distinguishing non-random sampling methods from imputation).

> Utah Br. 18:
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> As the Bureau expressly acknowledged prior to this litigation, the term "sampling" is generally understood to refer to *any statistical procedure* in which "information on a portion of the population is used to infer information on the population as a whole." [(emphasis added) quoting 1997 Report to Congress 23 (AR C0155)].
>
> Actual 1997 Report to Congress 23:
>
> *In our common experience*, sampling occurs whenever the information on a portion of the population is used to infer information on the population as a whole. [(emphasis added) AR C00155.]

Both untruncated Bureau statements are, as we have already seen, a perfectly accurate reflection of the well-recognized *difference* between imputation and sampling: whereas a *layman* might think, based on *our common experience*, that a "sample" is anything that is "less than the whole," a *statistician* will recognize that sampling requires scientific "methodology" (random or otherwise), in the selection of the subset to assure its representativeness. *See supra* at 31-34. Appellants simply omit everything that would make clear that their view is a layman's view, not a statistician's.

2. Contrary to appellants' suggestion, Utah Br. 20 n.2, the Census Bureau's view that hot-deck imputation is not the "sampling" prohibited by § 195 has been clear and consistent for the forty years the Bureau has employed imputation methods. In the *Procedural Histories* published by the Bureau after every decennial census since 1960, the Bureau has disclosed and explained its use of hot-deck imputation. AR C00376, C00384, C00416, C00423. Dozens of other Bureau documents published over the decades have consistently set forth the Bureau's view that hot-deck imputation is a permissible – indeed vital – method for enumerating the population.

Hogan Decl. ¶¶ 10, 31, 51 (JA 252-53, 263, 271-73) (citing documents); *see generally supra* at 3-10, 15-16 (discussing Bureau's consistent use of imputation). And in the *Orr* litigation arising out the 1980 census, of course, the Census Bureau under President Ronald Reagan vigorously defended the use of hot-deck imputation against a challenge under § 195. *See supra* at 7.

What is more, the Bureau's use of imputation in the census has proceeded with the full knowledge and acquiescence of Congress. In addition to the *Procedural Histories* published in connection with every census, direct testimony has advised Congress about the Bureau's use of imputation, and even about the Bureau's view of the distinction between imputation and sampling. Reporting the history of sampling and imputation before the House Subcommittee on Census and Population, Congress in 1991, GAO official L. Nye Stevens explained that the 1970 census used "imputations" *and* "a variety of other statistical procedures, such as sampling." Statement of L. Nye Stevens, Before Subcomm. on Census and Pop., House Comm. on Post Office and Civil Serv., 102d Cong., 1st Sess. 11 (1991) (AR C00678). By contrast, Stevens continued, "[d]ue to concerns about the legality of sampling, the Bureau *did not use sampling* techniques as part of the 1980 census *but did impute* about 762,000 persons into the count." *Id.* at 12 (AR C00679) (emphasis added); *see* Barbara Everitt Bryant (Director, Bureau of the Census), Components of Resident Population, Before Subcomm. on Census and Pop., Comm. on Post Office and Civil Serv., 102d Cong., 1st Sess. 8 (1991) (AR C01287) ("for the last several census, we have determined that the counts are improved if we use a procedure to impute persons for these units, rather than just assume there are no persons in these units"); Statement of Stephen E. Feinberg, Before Subcomm. on Census and Pop., Comm. on Post Office and Civil Serv., 102d Cong., 1st Sess. 6 (1991) (AR C00688) (discussing imputation in 1990 and past censuses).

The Bureau's longstanding, consistent position on the permissibility of imputation under the Census Act deserves the highest degree of deference from this Court. *See Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842-43 (1984). If deference to an agency's technical expertise is warranted anywhere, it is in this highly specialized area. Appellants' own brief exposes the risk of second-guessing, from a lay perspective, the uniform view of the Bureau's statistical experts that imputation is not the "statistical method known as 'sampling.'"

B. Appellants' "End-Run" Arguments Are Meritless

Appellants are left to argue that failure to interpret § 195 as prohibiting hot-deck imputation would allow the Census Bureau to make an end-run around the invalidation of sampling in *House of Representatives*, thus rendering § 195 a "meaningless prohibition" that is "easily nullified." Utah Br. 25. Appellants' arguments are without merit.

First, appellants insist that allowing imputation would be tantamount to the resurrection of sampling because the two methods have "the same practical effect." *Id.* at 26. They do not: as we have seen, sampling involves a conscious design to contact only a subset of the population, guaranteeing that not all the population will be contacted; imputation is used only after every effort is made to contact every unit, and data is lost, corrupted, or otherwise missing. *Supra* at 3-10, 15-18. The prohibition on sampling is plainly meant to ensure that the Bureau concentrates its efforts on complete coverage. It simply says nothing about what the Bureau should do when all such efforts have been exhausted, and records with missing or unclear data must be processed.

Second, on the basis of the erroneous premise that imputation and sampling are equivalent from a policy perspective, appellants further suggest that the Census Bureau might be motivated to consciously "scale-up" the use of imputation, perhaps even so that as much as 10% of the population is

enumerated through imputation. Utah Br. 27-28. Perhaps, appellants suggest darkly, the Bureau might even reduce resources devoted to follow-up just so that it could employ huge, unprecedented amounts of imputation in the census. Utah Br. 28. Yet appellants do not even attempt to explain what conceivable motivation the Bureau would have for reducing direct contact efforts *just for the sake of increasing imputation*. The integrity of the Bureau is above reproach; for all the decades the Bureau has used hot-deck imputation the sole purpose has been to achieve a more accurate enumeration. *See supra* at 3-10, 15-16. The Bureau well knows that reducing direct contact efforts just to increase the number of units enumerated by imputation would reduce overall accuracy. For that reason the Bureau obviously prefers to enumerate units by direct contact rather than by imputation if at all possible; hot-deck imputation has been used (outside the sampling context) only when at the very end of the process a record still has missing or unclear data. The suggestion that Bureau officials would consciously try to "scale up" the amount of imputation in the census, evidently just to thumb their noses at this Court, is indefensible.[19]

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[19] In a later section of their brief, appellants suggest one other motivation: a desire to manipulate political outcomes. Utah Br. 43 & n.12. This is sheer paranoid fantasy: paranoid, in view of the long and consistent Bureau record of seeking the most accurate enumeration possible; and fantasy, in view of the undisputed fact that the distributive effects of imputation on States' seats *cannot be determined in advance*, Utah Br. 34 (citing DOJ Mem. 15 ¶35); *see id.* at 7 (imputation not used to target traditionally undercounted groups). The reality is that imputation can have only *moderating* effects on efforts to manipulate apportionment. The best way to manipulate apportionment through the census is to manipulate direct contact efforts, so that desired groups or areas are counted and undesired groups or areas are shunned. The necessary effect of imputation is to minimize the consequences such efforts, because the units avoided in such a program would end up being enumerated by imputation anyway. Thus, one who is motivated by politics to affect apportionment would actually seek to *eliminate* the use of imputation. It bears

Finally, appellants suggest that Congress would not have prohibited a "relatively reliable" method like sampling and allowed a "relatively less reliable" method like imputation. Utah Br. 29. Appellants' factual premise is incorrect: both methods are reliable for the different purposes for which they are intended, and their numeric accuracy cannot be properly compared as appellants suggest. Hogan Decl. ¶ 23 (JA 259); Bailar *Orr* Aff. ¶ 12 (JA 92). Appellants' own expert explains the flaw in appellants' comparison: imputation methods will of course be more reliable when applied to impute data to 10% of the population from a subset of the population that *has been scientifically selected* (as was proposed in 1997), than when applied to impute data to 10% of the population from a subset that was *not* scientifically selected (as appellants hypothesize). Rubin Decl. ¶ 16-17 (JA 60). The fact that imputation *when used in gross, without a genuine sampling*, would be less reliable is exactly why the Bureau has always tried to exhaust every possible means of direct contact, leaving a very small, non-sampled percentage of the population that must be imputed as a last resort. We agree with appellants to the following limited extent: Congress probably *would* prohibit imputation if the Bureau ever began to rely on it in the outlandish way appellants hypothesize.

C. Status And Occupancy Imputation Cannot Be Meaningfully Distinguished From Size Imputation

Appellants' final statutory argument is that even if the Court does not believe that size imputation is a sampling method, it could still conclude that occupancy and status imputation involve some "sampling" methodology lacking in size imputation. But appellants make no genuine effort to explain what the pertinent difference might be. Appellants' only argument on the point appears to be that, with size im-

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further noting that imputation has been employed and defended by Presidential Administrations of every political stripe.

putation, the Bureau at least has knowledge that *some* persons exist in the unit, whereas with occupancy/status imputation, addresses "are *not* known to represent *occupied* units," and "*none* of the so-called persons . . . are known to exist." Utah Br. 31-32; *see id.* at 32-34.

There are two problems with this position. First, it is no distinction at all from the perspective of "sampling" methodology. With *all three* types of imputation, the Bureau enumerates the unit by imputing a value from another record – which is either using that record as a "sample," as appellants' entire argument posits, or it is not. The Bureau's degree of certainty as to the existence of "some" persons in the unit has no analytical bearing on the answer. Second, appellants' factual premise is, as we have already seen, incorrect. With respect to both occupancy and status imputation, the Bureau knows with certainty that such records often *do* represent occupied units, and thus that persons enumerated through occupancy/status imputation *are* known to exist. Dozens of studies have established those elemental facts, establishing further that to assume that such persons do *not* exist is to knowingly disregard existing persons. *Supra* at 18-19. That is not a recipe for a meaningful census count, which explains why Congress has never prohibited the use of hot-deck imputation.

III. THE 2000 CENSUS IMPUTATION PROCEDURES DID NOT EXCEED CONGRESS'S BROAD DISCRETION TO DEVISE THE MANNER IN WHICH THE ACTUAL ENUMERATION OF THE POPULATION IS MADE

Article I § 2 of the Constitution, as amended by the Fourteenth Amendment, states that the apportionment of the States must be based on the "whole number of persons in each State," and that "the actual Enumeration" of the population "shall be made" every ten years "in such manner as [Congress] shall by law direct." The scope of the authority

and discretion conferred on Congress by the Apportionment and Census Clauses is unusually broad, as this Court has explicitly recognized: "The text of the Constitution vests Congress with *virtually unlimited* discretion in conducting the decennial 'actual Enumeration.'" *Wisconsin v. City of New York*, 517 U.S. 1, 19 (1996) (emphasis added).[20] And Congress, in turn, "has delegated its broad authority over the census to the Secretary [of Commerce]." *Id.* In view of the Constitution's broad grant of authority to Congress, and Congress's delegation of that authority to the Secretary, this Court has held that the Secretary's election of methods for accomplishing the enumeration must simply be "consistent with the constitutional language and the goal of equal representation," and in practice "need bear only a reasonable relationship to the accomplishment of an actual enumeration of the population." *Id.* at 19-20 (internal quotation marks omitted).

The Bureau's use of imputation in the 2000 census easily satisfies those standards. The Bureau reasonably believes that ignoring record forms that are known to reflect actual people necessarily leads to an enumeration of the population that is less than actual. That view is consistent with an understanding of "actual Enumeration" as used in the Apportionment and Census Clauses to mean the actual population number. And even assuming the phrase "actual Enumeration" works to exclude certain methods of estimation wholly unrelated to efforts to conduct an actual count of the people, hot-deck imputation as used in the 2000 census is still per-

[20] The language of the Census Clause is almost identical to Article II § 2 cl. 2 (presidential electors shall be appointed by each State "in such manner as the State Legislature thereof may direct"), which "leaves it to the legislature exclusively to define the method of effecting the object [i.e., appointment of electors]." *McPherson v. Blacker*, 146 U.S. 1, 27 (1892).

missible because it is integrally connected to the process of counting persons individually.

A. The 2000 Census Imputation Procedures Bear A "Reasonable Relationship" To The Accomplishment Of An Actual Enumeration Of The Population

The Bureau has explicitly concluded that hot-deck imputation is a necessary tool in its efforts to obtain an actual enumeration of the population of each State. *See, e.g.*, Census Undercount Adjustment: Basis for Decision, 45 Fed. Reg. 69,366, 69,372 (Oct. 20, 1980).[21] That conclusion is without doubt a reasonable one.

There is no genuine dispute that the Bureau's use of hot-deck imputation as a final error-correction method has ensured that the last five censuses were much closer to an actual enumeration of the whole numbers of persons in each State than they would have been otherwise.[22] With respect to all three forms of imputation, the Bureau knows to a certainty that records with inconsistent, incomplete or missing

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[21] Appellants incorrectly state that, during the 1980 Census, the Bureau took the position that the phrase "actual Enumeration" would prohibit statistical methods like hot-deck imputation. Utah Br. 39 n.8. Exactly the opposite is true: in the very document cited by appellants, the Bureau agreed that "sampling" is not an "actual Enumeration," but explained at length why hot-deck imputation methods *are* among the "operational facets of 'actual Enumeration.'" 45 Fed. Reg. at 69,373.

[22] Appellants err in suggesting that hot-deck imputation does not improve distributive accuracy. Utah Br. 34. First, the pleading they cite says only that distributive effects cannot be predicted *in advance*, which is true, since the states' relative response rates cannot be predicted with any certainty. Second, imputation plainly *can* improve distributive accuracy, in any census in which some states turn out to have comparatively low record-return or data-capture rates, for whatever reason. Failing to impute would leave those states with a proportionally less-than-actual population count; imputation would improve the distributive accuracy of the count.

data often reflect units with persons in them. *Supra* at 16-19. Thus imputation happens either way: the sole question is whether to enumerate the unit in every single case with the implausible value of "zero," or to enumerate the unit by imputing a value that would plausibly reflect actual persons, if any, that would otherwise be unenumerated.

The bottom line is that if the Bureau assigns a "zero" to all such records, it will knowingly disregard actual persons, and the census will have consciously identified *less* than the "whole numbers of persons in each State." In common sense terms, the census would be a *non*-actual, or false, enumeration of the population. J.S. 25a (imputing zero in all cases of inconsistent or missing data "appears clearly inconsistent with the constitutional imperative of an actual enumeration"). To be sure, no census by any method could ever enumerate the population with perfection. But the Framers recognized exactly that problem, and thus conferred broad discretion on Congress in determining the actual enumeration. This Court acknowledged that discretion in *Wisconsin*, holding that the Bureau is not constitutionally required to employ every method that will bring the final enumeration closer to the actual enumeration, so long as its methods have a "reasonable relationship" to the accomplishment of the constitutional goal. 517 U.S. at 20. It follows almost by definition, however, that a decision to employ a method that *does* move the census count closer to the actual population enumeration in each State is within the same range of discretion.

B. The 2000 Census Imputation Procedures Are "Consistent With" The Constitutional Language

Appellants argue that the phrase "actual Enumeration" as used in the Census Clause refers to a very particular method of counting people. Thus Congress's "virtually unlimited discretion" to accomplish an "actual Enumeration" turns out to be limited essentially to funding and resource allocation.

Utah Br. 38 n.6. But the proper question is whether the Bureau's view is "consistent with" the constitutional language, not whether it is the only permissible interpretation. *Wisconsin*, 517 U.S. at 19. Appellants err in suggesting that no understanding of the Apportionment and Census Clauses would sanction the Bureau's use of imputation. In fact, the better reading of the Clauses is that the phrase "actual Enumeration" refers simply to the determination of the actual population number, allowing the use of hot-deck imputation to help identify that number.

1. At the outset it is important to see why the phrase "actual Enumeration" must be analyzed in its particular textual setting: the extratextual dictionary definitions relied upon by appellants, drawn from the concurring opinion in *House of Representatives*, 523 U.S. at 347, are of little ultimate guidance, for they suggest not one but three distinct meanings of "enumeration." One meaning suggests a *specified list* or *catalog* of *named things* in a population. Utah Br. 36 ("[a]n account of a number of things, in which mention is made of every particular article"). This is the meaning conveyed by "enumerated powers," or by the Ninth Amendment's phrase "the enumeration in the Constitution, of certain rights." It was a valid meaning of enumeration at the time, but by no means necessarily the meaning the Framers intended to convey in the Census Clause. A second meaning suggests a method of *one-by-one* counting. *Id.* ("[t]o count or tell, number-by-number"; "[t]o reckon up singly; to count over distinctly"). Yet a third meaning suggests simply the act of identifying the *overall number* of things in the population. *Id.* ("to number"; "the act of numbering or counting over"; "number told out"). The latter two meanings were equally valid at the time; the dictionaries alone simply do not tell us which meaning the Framers intended to invoke in the Constitution. But the ambiguity in these definitions does demonstrate that hot-deck imputation is consistent with the constitutional language, in particular the third of those definitions.

Further textual analysis of the Clauses only buttresses that conclusion.

2. The first clause of Article I § 2, as amended by § 2 of the Fourteenth Amendment, provides that "Representatives shall be apportioned among the States according to their respective numbers, counting the whole number of persons in each State, excluding Indians not taxed." This clause establishes a fixed and plain rule for apportionment: Representatives are to be apportioned "according to [the States'] respective numbers." And the States' "respective numbers" are defined as "the whole number of persons in each State, excluding Indians not taxed." Thus the apportionment rule, which is fixed by this clause, is in theory violated if Representatives are apportioned according to any population figure that is less than or different from "the whole number of persons, excluding Indians not taxed."

Thus the question is, how is the "whole number of persons" to be identified? The next clause answers the question: "The actual Enumeration shall be made [every ten years] *in such manner as [Congress] shall by law direct*." This sentence can only be read in conjunction with the one immediately preceding it, for the use of the definite article *the* to identify "Enumeration" establishes that a particular "enumeration" is being referred to, and the only candidate is found in the previous sentence, i.e., the "respective number[] of persons" in each State. Thus, consistent with the *third* dictionary definition above, the phrase "actual Enumeration" as used here means the act of identifying the actual number of persons in each State – the "number told out." It is not a specification of the exclusive means by which that identification must be made.

The structural usage of "actual Enumeration" to refer to the determination of the actual population figure, rather than to a particular process for making that determination, is confirmed by the Capitation Clause, Article I § 9 cl. 4, which

provides: "No Capitation, or other direct, Tax shall be laid, unless in proportion to the Census or Enumeration herein directed to be taken." It makes sense to speak of a tax being laid in proportion to the actual population of each State; it makes no sense to speak of tax proportional to *a specific process* of identifying that population. This parallel use of the term "enumeration" strongly suggests the Apportionment and Census Clauses, too, refer simply to the identification of the population figure, not the means thereto.

3. The history of the drafting of those Clauses further confirms the reading of "actual Enumeration" to mean identification of the actual population number. The initial proposals for population-based apportionment and/or direct taxation all specified a periodic "census." 1 Max Farrand, *The Records of the Federal Convention of 1787*, at 570-71, 575, 594, 595, 600 (1966 ed.). The Committee on Detail subsequently proposed a draft Constitution embodying various agreed-upon proposals, and it changed the word "census" to "number":

> The proportions of direct taxation shall be regulated by the whole *number* of white and other free inhabitants [plus three-fifths of slaves] . . . which *number* shall . . . be taken in such manner as the said Legislature shall direct.

2 Farrand, *supra*, at 182-83 (emphasis added). After a month of debate on that and other provisions, with *no* discussion about the methodology for identifying the "number of inhabitants," the Committee on Style took that language and produced what ultimately became the language of the Apportionment and Census Clauses, substituting the phrase "actual Enumeration" for the word "number." *Id.* at 590. There is no historical evidence that the Committee intended by that substitution to deviate from the plain meaning of the word "number." *Cf. Nixon v. United States*, 506 U.S. 224, 231 (1993). And, as shown above, careful textual analysis dem-

onstrates why "actual Enumeration" can quite reasonably be read to mean the identification of the actual population number as it is used in the Clauses.

C. Reading "Actual Enumeration" To Prohibit Gross Estimations Does Not Prohibit The 2000 Census Imputation Procedures

The Court need not decide whether "actual Enumeration" is in fact best read to refer to the determination of the actual population figure, for even assuming the phrase does invoke some limitation on the methods for making that determination, that limitation does not exclude all counting-related statistical methods for enumerating individual housing units, including hot-deck imputation as used in the 2000 census. Appellants labor at length to establish that the Framers were aware of various schemes for broadly estimating state and national populations on the basis of agricultural, maritime, and other non-population-based records, and did not consider them to be "enumerations" of the population. But that evidence shows at most that "actual Enumeration" would exclude sample surveys and other "gross statistical estimates." Utah Br. 36. Even on the view that an actual enumeration demands some form of individualized counting process, nothing in the Census Clause prohibits the use of imputation to provide count data on a few particular addresses *as part of* what is, by any account, an exhaustive actual enumeration of the population under this conception of the phrase.

First, imputation is a process employed only after massive direct coverage efforts have been made. In this respect it differs even from sampling, which is by definition a conscious effort *not* to engage in complete coverage. And it certainly differs from the rough guesses of the founding era, which were not based on population-count data at all, but instead on data maintained for entirely distinct purposes.

Second, imputation is an effort to enumerate persons on an individualized, housing-unit-by-housing-unit basis. In

this respect it differs dramatically from the gross estimates of the founding period. Indeed, imputation actually reflects census-taking practices going back to the first days of the census. The census has *never* required enumerators to personally count each and every person – to count by heads, as it were. The first censuses records were taken not person-by-person but household-by-household, *Encyclopedia*, *supra*, at xi, and by the end of the nineteenth century enumerators were even allowed to rely on hearsay from neighbors and others as needed, Hogan Decl. ¶ 11 (JA 253-54). Appellants' objection to imputation on the ground that "the Bureau ha[s] no actual knowledge as to the number of occupants" in a given housing unit, Utah Br. 37, applies with equal force to census methods that have prevailed the entire history of the census. Once the Bureau begins to rely on some evidence other than the personal observation of a person acting on the Bureau's behalf, the Bureau itself obviously has no "actual knowledge" of the population count. Thus the question necessarily reduces to one of evidentiary reliability, *viz.*, whether the Bureau has sufficient reason to believe that a particular method of indirect observation will, on balance, accurately capture the population of units the Bureau cannot personally observe. And that was a question left by the Constitution to the reasonably exercised discretion of Congress.

Third, and related to the above two points, hot-deck imputation is not subject to the kind of political manipulation to which gross estimating techniques may yield. The highly subjective rough guesses of the founding era were surely subject to manipulation on their own terms, and certain types of sampling may be as well, since particular subpopulations can be targeted for selection. There is no subjectivity, and no selective sampling, with hot-deck imputation. Indeed, appellants' sole claim for the manipulability of imputation is not directed at imputation at all, but at forms of manipulation that could take place *without* imputation: reduction in follow-up resources and a selective approach to the inclusion of

addresses on the DMAF. Utah Br. 43 n.12. As we have seen, the sole effect of imputation is to *reduce* the consequences of such manipulations. *Supra* note 19. If the opportunity for political manipulation is what distinguishes the methods the Framers intended to exclude from the census process, the strict head-counting favored by appellants would be the first to go, suggesting that the criterion is suspect from the outset. But even f concerns about manipulation led them to exclude only gross estimations, the fact that imputation is not subject to such manipulation demonstrates why it is not among the gross estimations the Framers disfavored.

Appellants' argument boils down to this: the Census Clause prohibits Congress from using imputation to supplement exhaustive contact efforts and thereby obtain a more accurate count of the actual number of persons in each State (because that is not an "actual Enumeration" of those persons), but the Clause would allow Congress to conduct a half-hearted national "headcount" with minimal resource and effort (because that *is* an "actual Enumeration"). Utah Br. 50. There is a more sensible reading: the constitutional objective of the Apportionment and Census Clauses is that Congress identify the actual number of persons in each State, and because that objective cannot be accomplished with perfection by any method, the Constitution confers on Congress substantial discretion to devise the manner best suited to accomplish it. Even assuming that the "actual Enumeration" phrase limits the kind of methods Congress may authorize in the pursuit of that objective, the logic and history underlying such limits would have no application to the 2000 census imputation procedures. Those procedures remain well within Congress's discretion to direct the manner in which the actual enumeration is accomplished.

CONCLUSION

For the foregoing reasons, the judgment of dismissal should be affirmed.

Respectfully submitted,

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